

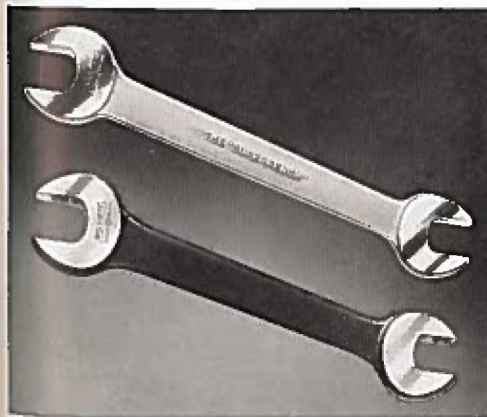
# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

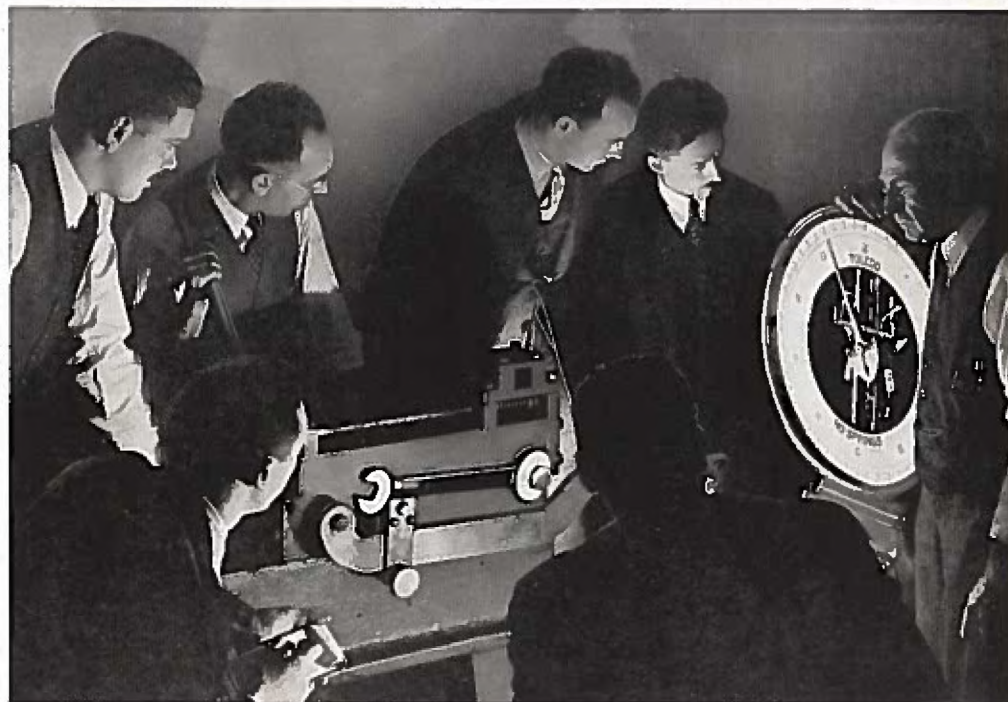
### WILLIAMS' "SUPERIOR" (CARBON STEEL) WRENCHES

For some years previous to the war, the popular trend was toward replacement of this type of wrench with alloy steel tools which usually were chrome-plated and more highly finished. Today, however, material shortages and the need for critical economy makes a close examination of the relative merits of carbon and alloy steel wrenches particularly timely. Since we manufacture *both* types, we can present the following facts and figures without bias or prejudice.

Williams' "Superior" Wrenches are forged from carbon steel, specially processed to exacting specifications. These wrenches have been improved to a point where they are substantially twice as strong as the earlier carbon steel wrenches of our own manufacture. Comparative tests demonstrate that they average (throughout all patterns and sizes) 93% as strong as our corresponding alloy steel wrenches. In the popular Double-Head Engineers' pattern,



Comparison of Double-Head Engineers' Pattern of Alloy (top) and Carbon Steel wrenches. Both wrenches have same openings.



Comparative strength tests were made in Williams' Laboratory with every size and type in the carbon and alloy steel wrench lines.

"Superior" (carbon steel) Wrenches are *actually stronger* than the corresponding sizes of alloy wrenches which are of thinner design. Other patterns in the Williams' line are forged from identical dies whether of carbon or alloy steel—thus the *average* shows a slight strength advantage in favor of alloy steel.

Against this slight advantage are the following practical considerations: Alloy steel wrenches cost nearly twice as much as "Superiors"; critical alloys are needed in many items of war production where substitution is highly undesirable; in the Double Head Engineers' pattern, the thicker design of "Superior" Wrenches affords a more comfortable hand grip and a better bearing on the nut; the usual finish supplied on "Superior" Wrenches involves no critical material (such as chrome), since they are finished in baked-on enamel rather than plating.

#### Economize with Carbon Steel Wrenches

In view of today's conditions, we strongly recommend the use of "Superior" (carbon steel) Wrenches wherever possible. For most industrial applications, any advantage in alloy wrenches is negligible. Some types of close-quarters work require the thinner heads available in the Double-Head Engineers' pattern of alloy wrenches, thus justifying their higher cost.

An informative booklet, providing comprehensive data on standard wrench types is available without charge. Write for "How to Select and Use Wrenches."

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS



VICES





# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON WILLIAMS' BORING TOOLS

For those lathe operations involving boring and internal threading, Williams' Tools incorporate certain features which tend to conserve man-hours, improve output, and to reduce the number of rejects, particularly with semi-skilled and inexperienced operators.



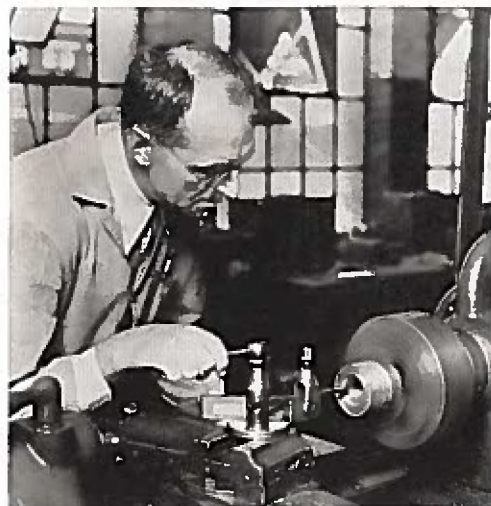
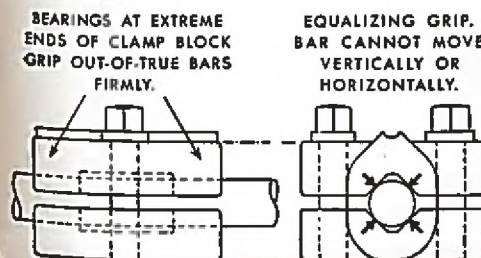
Sleeve Bar



Plain Bar

### Williams' Series 80 Boring-Tool Holder

Williams' Boring-Tool Holders (80 series) are designed so that each holder will accommodate several sizes of bars and so that commercial forms of bar steel are adaptable for either bars or cutters without machining. Adjusting sleeves or bushings are not used with this holder so there are no loose parts to become misplaced or lost. The "V" Block clamping arrangement, sketched below, grips even undersize or out-of-round bars firmly at four points, thus preventing tool chatter.



*Simplicity of design and sufficient stability to assure freedom from tool chatter are essential features in Tool-Holders for war production.*

The Sleeve Bar regularly furnished accommodates either a straight or angle cutter in the one head, so there is no extra head to be misplaced while the other is in use. A Plain Bar, as illustrated above, can also be supplied if specified. Series 80 Holders are made in 5 sizes covering bar diameters from 3/16" to 1-1/8".



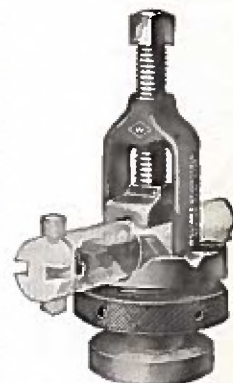
### Williams' Light Boring-Tool Holder

For tool room use and all small work—including turning, as well as boring and threading—Williams' Light Boring Tool Holder incorporates certain distinctive features. In boring and internal threading

operations each holder will take several sizes of bars. Easy, rapid adjustment is assured with the knurled adjustment screw. When used as a Turning Tool Holder the offset shank makes it reversible for right and left hand work. This Holder is made in 3 sizes accommodating bars from 1/8" to 7/16" in diameter.

### Williams' Adjustable Boring-Tool Post

The Williams' Adjustable Boring-Tool Post, with its long range center adjustment, is designed to accommodate many sizes of bars on various types of lathes. Easy, quick, vertical adjustment is accomplished by first selecting the proper bar recess in the slotted collar and then rotating the knurled ring which raises or lowers the bar to the correct height. Tightening the set screw in the head of the post tightens the whole device instantly, giving an extremely rigid tool. For all phases of boring and internal threading this vertical adjustment permits proper centering rapidly and assures perfect performance. The "V" block bar clamping construction grips the bar at four points which eliminates vertical or horizontal movement, thus preventing chattering. Made in 4 sizes for bars 1/2" to 2-1/4" diameter.



# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

TOOL HOLDERS



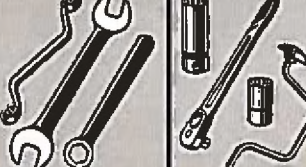
"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS  
SCREWS



HOIST HOOKS



EYE BOLTS



VICES







# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON "VULCAN" CHAIN PIPE TONGS

There are 6 types of Williams' Tongs, each offering certain advantages for particular classes of work. A knowledge of the features of these various types will enable users to better select the most efficient and economical type for the work at hand.



**"VULCAN SUPERIOR":** A universal service tong for both pipe and fittings. Has Reversible pipe-and-fittings jaw. Seven sizes, up to 12" capacity.



**"VULCAN":** The original "VULCAN" Pipe Tong—still the favorite oil-field tongs for general work. Chain swings from center and can be used on either side of the jaw. Eight sizes, up to 18" capacity.



**"VULCAN SUPERTONG":** Same design as "VULCAN" but forged from alloy and high-tensile steel. Provides 50% greater strength than "VULCAN" with no increase in bulk or weight. Eight sizes, up to 18" capacity.



**"IMPROVED VULCAN":** Same as "VULCAN" except jaws are double-ended and reversible, providing double service life. Seven sizes, up to 12" capacity.



The "V" recess in "Vulcan Superior" jaws assures quick, positive grip on fittings.

### Types of "Vulcan" Chains

While "VULCAN SUPERIOR" and "VULCAN" Tongs are furnished with either Flat Link or Cable Chain, all other types have Flat Link Chain only.

There are three types of Flat Link Chains for Williams' Tongs—"STANDARD", "XTRA-STRONG" and "SUPERCHAIN". "Standard" Chains are regularly furnished with all except "Supertongs" but "Xtra-Strong" Chains, providing approximately 40% greater strength, can be supplied at additional cost. "VULCAN SUPERTONGS" are regularly furnished with "Superchains". Every "VULCAN" Chain, regardless of type, is individually *proof-tested* on a standard tension machine to two-thirds of its breaking strain.

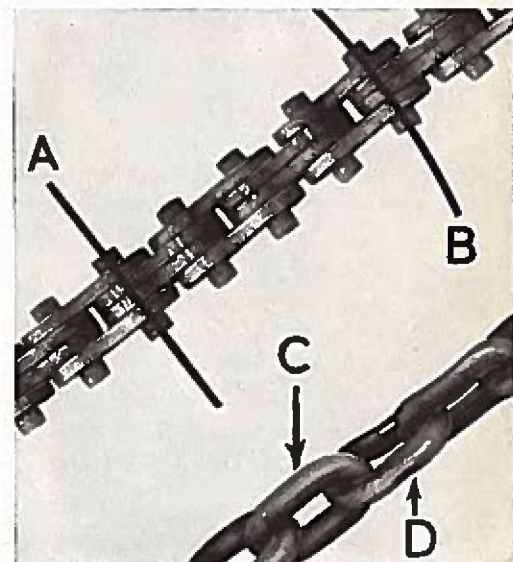
### Use and Care of Tongs

In using Chain Pipe Tongs the best gripping position is that which is midway of

the jaw teeth, or rearward therefrom. The bending of the tong handle under load is not evidence of a defect. Such bending is intended to act as a warning and "safety valve" in advance of breakage of chain, which would incapacitate the tool.

In Flat Link Chains on tongs, an occasional inspection of the first two or three rivets and links adjacent to the swinging, or anchor link should be made, since the load is greatest at that point. Badly bowed, or curved rivets indicate that the chain has been loaded almost to breaking strength and is probably unsafe.

In Cable Link Chains, the links give warning by stretching and pulling "rigid" if the breaking point is approached.



- A. Straight rivet indicates chain is safe.
- B. Curved or bowed rivet—unsafe.
- C. Safe link indicated by normal shape.
- D. Link stretched or pulled "rigid"—unsafe.

# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere... J. H. Williams & Co., Buffalo, N. Y.

TOOL HOLDERS



"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS  
SCREWS



HOIST HOOKS



EYE BOLTS



VICES





# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

### WILLIAMS' "SUPERSOCKET" WRENCHES

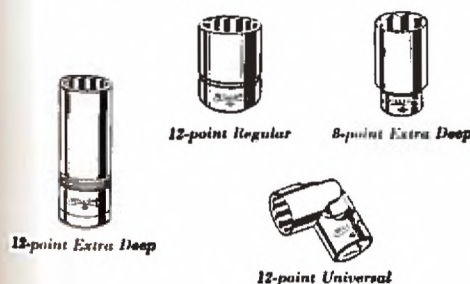
Since *socket wrenches*, today, play an important part in the servicing as well as manufacture of mechanized war equipment, a general knowledge of standardized types is desirable. Williams' "Supersocket" Wrenches include 5 separate and distinct patterns of *standard drive sockets*, each with its full assortment of handles and parts. A brief description of each pattern follows, together with information on the type of service for which it is designed.

#### Midjet Pattern 1/4" Square Drive. Openings, 3/16" to 7/16"



Slim, straight wall sockets for electrical and all delicate adjustments. Ideal for magnetos, timers, generators, wiring connections, radios, carburetors, etc.

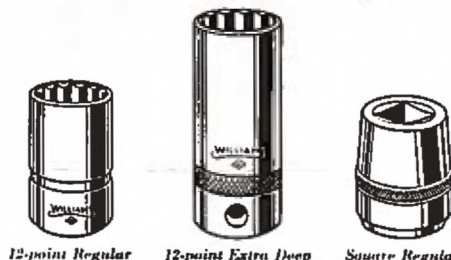
#### Bantam Pattern 3/8" Square Drive. Openings, 1/4" to 3/4"



Light, but strong, straight wall sockets with thin walls for use in close quarters. Universal sockets are fitted with spring tension to maintain desired operating angle. Recommended for aviation and general service.

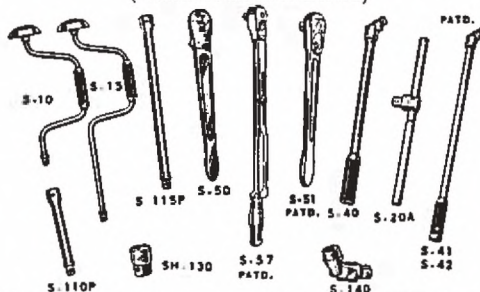


#### Standard Pattern 1/2" Square Drive. Openings, 7/16" to 1-1/4"



The 12-point sockets in this pattern have straight, thin walls. Those with square openings are the Taper Nose type. Extra Deep sockets have cross hole for use with a bar. Recommended for industrial and general service.

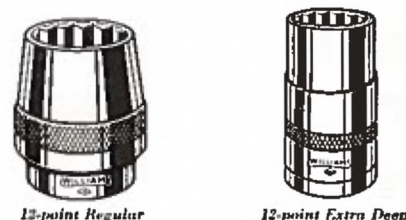
#### TYPICAL HANDLES & PARTS (Standard Pattern Illustrated)



S10 & S15: Speeder Handles  
S110P & S115P: Extensions  
S50: Ratchet Handle  
S57: Torque "Measurewrench"

S51: Reversible Ratchet Handle  
S40, S41 & S42: Flex Handles  
S20A: Sliding T Handle  
S1130: Adapter, S140: Univ. Joint

#### Heavy Duty Pattern 3/4" Square Drive. Openings, 7/8" to 2-1/4"



Designed for harder service where more strength is required than on the "everyday" job, this pattern provides ample strength without clumsy bulk.

#### Extra Heavy Duty Pattern 1" Square Drive. Openings, 1-1/16" to 2-3/4"

Ruggedly designed for the toughest kind of service. Sockets are all cross-drilled to receive sliding handle, which minimizes tendency of socket to "tip" under extreme leverage. "Lock-Socket" device eliminates danger of sockets being detached in service. Ideal for all extremely heavy work including tanks and other mechanical field equipment.



#### General Characteristics

*Speed and Safety* are inherent socket wrench advantages. "Supersockets", with their innumerable combinations of handles, accessories and drive adapters, provide an extremely flexible wrench system that is speeding war production and the servicing of fighting equipment for land, sea and air.

Williams' "Supersockets" are sold singly and in complete Sets. Write for booklet, "How to Select and Use Wrenches."

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century for  
**DROP-FORGINGS and DROP-FORGED TOOLS**

Sold by Leading Industrial Distributors Everywhere ... J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



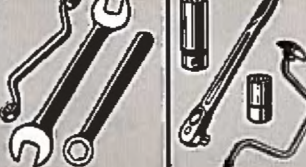
#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS



VISES





## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON "VULCAN" LATHE DOGS

Lathe Dogs provide a simple and flexible means of driving shaft and other between-centers work on engine and semi-automatic lathes. Their universal use makes them an important metal-turning accessory and makes a knowledge of available standard types desirable at this time.

Williams' "Vulcan" Lathe and Milling Machine Dogs cover a wide range of shop, tool-room and manufacturing requirements. All are drop-forged from a strong, tough grade of carefully selected steel. Screws are of special steel, hardened and tempered, and are threaded U.S. Standard with the exception of those above 1" diameter which have eight threads to the inch. Both "Safety" and "Non-Safety" types, as illustrated, are available and interchangeable. Safety screws (& wrench) are furnished unless otherwise specified.



**"Vulcan" Lathe Dogs**  
with Bent Tail and one Screw



Nos. 1 to 13 inclusive, 3/8" to 5" capacity

Nos. 112 to 114 inclusive, 4" to 6" capacity

Sold by Leading Industrial Distributors Everywhere... J. H. Williams & Co., Buffalo, N. Y.



Safety for the operator is an important feature of this "Vulcan" Dog equipped with a square recess "safety" screw. There are no sharp projections to injure the operator's hands or catch his clothing.

**"Vulcan" Heavy Service  
Lathe Dogs**  
with Bent Tail and two Screws



**"Vulcan" Clamp Lathe Dogs**



The case-hardened nuts with which the Screws of this clamp are equipped, provide a ready means of arrangement for the minimum projection of screws beyond the body of dog and thus lessen danger to the operator when tool is in use.

Nos. 61 to 64 inclusive, 1 1/8" to 3 1/4" capacity

**"Vulcan" Milling Machine Dogs**  
with Flat Bent Tail and one Screw



Designed for taper work carried between centers on milling machines, the flat tail works in the head-slot without the backlash unavoidable in Dogs with taper tail. Serves also as a heavy pattern lathe dog. Heads are of sufficient size to permit re-tapping for larger size screws, as the

threads wear. Non-safety screws only are furnished with "Vulcan" Milling Machine Dogs. They are threaded U. S. Standard and made of a special grade of steel, hardened and tempered.

Nos. 42 to 48 inclusive, 1/2" to 2" capacity

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
**DROP-FORGINGS and DROP-FORGED TOOLS**

TOOL HOLDERS



"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS  
SCREWS



HOIST HOOKS



EYE BOLTS



VICES







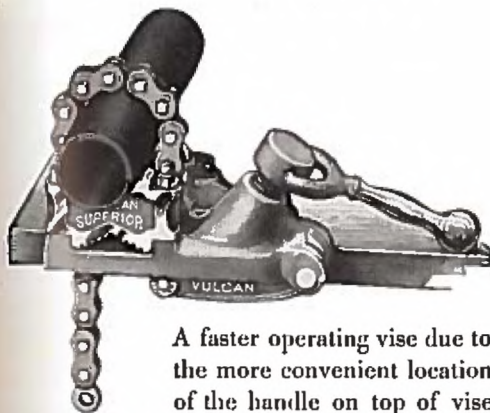
# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON "VULCAN" CHAIN PIPE VISES

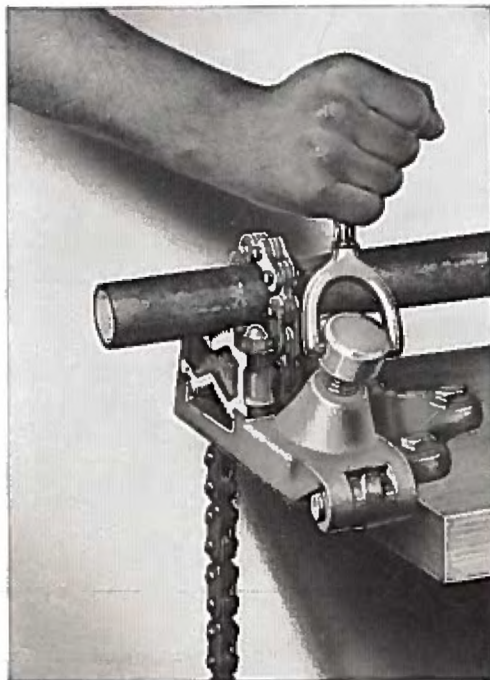
● Williams' "Vulcan" Chain Pipe Vises are available in two basic types: "Vulcan Superior", with adjusting handle on top, and "Vulcan", of conventional design with handle below. In addition, the "Vulcan" Clamp Kit Vise provides a portable tool which may be quickly attached to bench, truck platform, post or other support on the job. Williams' line also includes the "Vulcan" Vise Stand—a complete unit combining Vise, Stand and Pipe Bender. A description of the construction and utility features of these Vises is given here to facilitate selection of the most efficient type for any specific service.

#### "VULCAN SUPERIOR"



A faster operating vise due to the more convenient location of the handle on top of vise

and above the bench. This vise also has reversible jaws, which double the service life of the tool. It has 1/2" larger capacity than other chain vises of corresponding size. Made entirely of tough wrought steel with drop-forged base, jaws, handle and chain arm. Two sizes, for pipe 1/8" to 4 1/2".



*The convenient location of "Vulcan Superior's" handle, "above the bench," is a great timesaver.*

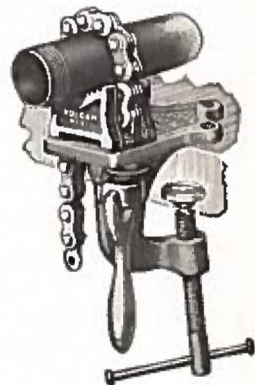
#### "VULCAN"



The original chain pipe vise and a favorite with pipe workers for more than thirty years. A light, compact, positive-gripping tool suitable for a wide variety of pipe work. Made entirely of wrought steel the same as "Vulcan Superior". Available in four sizes, for pipe 1/8" to 8".

#### "VULCAN" CLAMP KIT VISES

Extreme portability is a feature of this vise which weighs only 5-3/4 lbs. Can be carried to job in tool kit and quickly secured to bench, truck platform, post or other support without use of bolts or screws. The efficient clamping device is integral with the malleable iron base. The drop-forged jaws, nut and handle, and the chain are interchangeable with similar parts of "Vulcan" Vise, No. 1. Made in one size only, for pipe 1/8" to 2".



#### "VULCAN" VISE STANDS



A 3-in-1 unit combining Vise, Stand and Pipe Bender. The high-grade malleable iron base, designed for severe service, is equipped with oil can recess, tool slots, and rear pipe support. The Pipe Bender handles pipe up to 3/4". For easy carrying, legs fold and secure with tie chain. Vise parts are interchangeable with "Vulcan" No. 1. Made in one size only, for pipe 1/8" to 2".

# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere... J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS



VISES





# HOW AND WHY

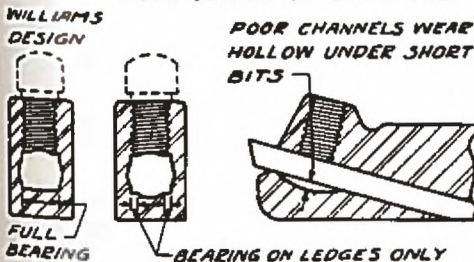
## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON WILLIAMS' TURNING-TOOLS

Since metal turning constitutes a major operation in our war production program, consideration of available tools for this purpose is timely. The Tool Holder system offers definite advantages over solid, forged tools for lathe, planer, shaper, etc. Greater convenience, efficiency and economy result with the use of properly designed Tool Holders, which save practically all waste of costly high speed steel, eliminate all dead stock of heavy forged tools, do away with all blacksmith labor and much grinding, and reduce lost man and machine hours waiting for tools substantially to zero.

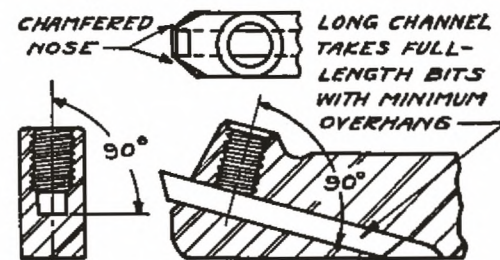
Tool Holders, however, to satisfactorily replace solid forged tools, must be engineered to withstand the severe treatment which modern metal turning imposes on the cutting tool. Williams' Holders are drop-forged from a specially selected grade of steel, treated and hardened to develop maximum resistance to all wear and insure a hard rigid seat for the cutter directly under the holding or locking device. This tends to prevent cutter breakage which is due largely to the recess or pocket formed by short bits being forced into the cutter seat of the holder when the shank has not been properly hardened.

#### POOR CUTTER BIT CHANNELS



The bottom face of the shank of all Williams' Holders is rechecked after heat treating to insure a flat, square surface for the holder to rest on.

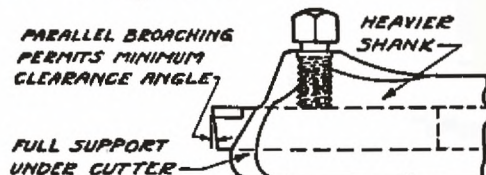
In Williams' Turning Tool Holders the nose is chamfered to permit convenient use in close quarters where space is limited. Set Screws are located at exact right angles to the cutter bit channel to provide full contact of the point of the screw with the cutter bit and insure maximum holding power. Screws and tapped holes are held to the close fits essential for long life under gruelling tool holder service.



Sketches above illustrate a straight shank Williams' Turning Tool Holder. Note that the extremely long cutter bit channel extends thru the bottom face of the shank, providing maximum entry for the cutter bit. This feature assures minimum overhang when a full-length bit is used, thus reducing the danger of cutter bit breakage.

### Carbide Turning-Tool Holders

Since tungsten carbide cutters approach a diamond in hardness (88-92 Rockwell A), the brittle nature of this material makes it absolutely essential that the cutter bit be held rigid and the cutting edge supported as much as possible.



To provide a rigid tool and assure maximum support of the cutter, the shanks of Williams' Carbide Holders are made heavier and longer than regular Turning-Tool Holders of equal cutter capacity. The cutter channel is broached parallel with the base of the shank rather than at the usual 15° angle. The parallel broaching of the cutter slot permits proper grinding of the cutter so as to give maximum support to the cutting edge.

### Regular Turning-Tool Holders



### Carbide Turning-Tool Holders



# WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere... J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



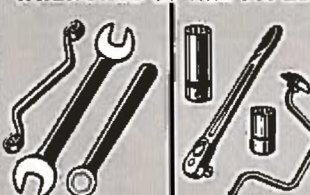
#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS



#### VICES







# HOW AND WHY


## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON WILLIAMS' "SUPERIOR" WRENCHES

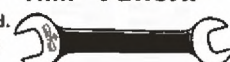
● Since Williams' "Superior" (Carbon Steel) Wrenches provide exceptional strength with minimum use of critical materials, a review of standard available types is timely. "Superior" Wrenches are approximately twice as strong as earlier carbon steel wrenches of our manufacture. Comparative tests demonstrate that they average (throughout all patterns and sizes) 93% as strong as our corresponding alloy steel "Superwrenches", which we feel are among the strongest wrenches ever manufactured commercially.

A description of the most generally used "Superior" wrench types follows. More detailed information is contained in Williams' Wrench Booklet, No. A-81, which will be mailed for the asking.


#### Engineers' Pattern

 15° Angle, Double Head. For general service.  
Size range, 5/16" to 5-3/8" openings.  
Also single head style, 3/16" to 7-5/8".

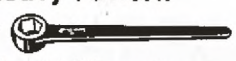
#### Check Nut or "Thin" Pattern

 15° Angle, Double Head. For Check, Jam or Lock Nuts, etc.  
Size range, 13/32" to 1-1/2" openings.  
Also single head style, 7/16" to 1-11/16".

#### Hex-Box, Regular Pattern

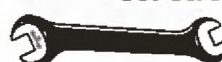
 15° Angle, Single Head. For general service.  
Size range, 13/32" to 4-5/8" opening.  
Larger sizes, from 3-3/8" to 4-5/8" opening, are also furnished with striking face on end of shorter handle.

#### Hex-Box, Heavy Pattern


 15° Angle, Single Head. For heavy duty.  
Size range, 1-1/4" to 3-1/8" opening.  
Also made with striking face on end of shorter handle throughout full size range.



#### Set Screw Pattern

 22-1/2° Angle, Double Head. For Set Screws, Square Cap Screws & Nuts.  
Size range, 3/16" to 1-1/8" opening.  
Also single head style, 3/16" to 1-1/8".



#### "S" Pattern

 22-1/2° Angle, Double Head. For Standard Nuts and Cap Screws.  
Size range, 5/16" to 2" opening.

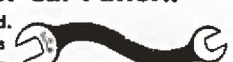
#### Machine Pattern

 Straight Opening, Dbl. Hd. Extra heavy for Planers, Milling Machines, Lathes, Drill Presses, etc.  
Size range, 3/8" to 1-7/16" opening.

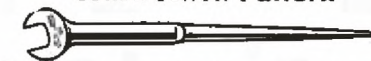
#### Tool Post Pattern

 For Set Screws only.  
 For Nuts and Set Screws.  
Nos. 554 to 557, for set screw sizes (both ends) 7/16" to 3/4".  
Nos. 562B to 568D, openings 5/8" to 2". Same opening both ends.


#### Heavy "S" or Car Pattern

 22 1/2° Angle, Double Head. Long leverage wrenches primarily for railroad use.  
Size range, 5/8" to 2-7/16" opening.


#### Construction Pattern

 15° Angle. Straight handle. Deep opening for square nuts, and tapered handle for lining-up bolt holes.  
Size range, 7/16" to 2" opening.


#### Structural Pattern

 Straight opening. Offset handle. Deep opening for square nuts, tapered handle for lining-up bolt holes.  
Size range, 7/16" to 2" opening.


#### Face Spanners

 For general service.  
Size range, 1" to 4" C to C of pins, in 1/4" multiples. Also Adjustable Face Spanners in 3 sizes with 2, 3 and 4" capacities.


#### Pin Spanners

 For general service.  
Size range, for circle diameters 1" to 6".


#### Hook Spanners

 For Taper Nose Lathe Spindles and general service.  
Size range, for circle diameters, 7-3/8", 9-1/4" and 12-1/2". Also Adjustable Hook Spanners in 3 sizes for circle diameters ranging from 3/4" to 4-3/4".

#### Pin Handle Sockets

 With Hex or Square Opening for general service.  
Size range: Hex openings 5/16" to 2-3/8". Square openings, 1/8" to 2".

#### Offset Sockets

 With Hex or Square Opening for general service.  
Size range: Hex openings, 5/16" to 2-3/8". Square openings, 1/8" to 2".

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century of  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere ... J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS



VICES





# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION



**SPEED.** Much time is saved on this machine assembly job with this "Supersocket" combination. The operator quickly tightens a long row of cap screws while standing erect. Wrench assembly consists of S15P Speeder Handle, S110P Extension Bar and Socket.



**SAFETY.** A slip of the wrench could be serious for this millwright working on an overhead lineshaft. His "Supersocket" Wrench not only gets to an awkwardly-placed nut but, in completely encasing it, makes slippage practically impossible. Wrench assembly consists of S20A Sliding T Handle and Socket.

### SAVING TIME WITH "SUPERSOCKETS"

● Detachable Socket Wrenches offer two inherent advantages which should not be overlooked today. Because of their basic design which provides for the assembling of the various components, Williams' "Supersockets" permit the user to *assemble* what amounts to a special wrench for the particular job at hand. Thus a *faster*, and often *safer*, wrench is provided as shown in the several Socket Wrench applications illustrated. Vital man-hours can be saved on many manufacturing, maintenance and repair operations by the use of a suitable "Supersocket" combination.

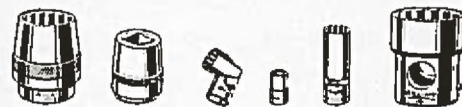


**OBSTRUCTIONS** like this would present quite a problem for any other type of wrench, and would undoubtedly require removal of the bracket in the foreground. Wrench assembly consists of S51 Ratchet and Socket. This Ratchet will permit rotation of the nut when handle swing is limited to as little as 30°.

#### A FEW TYPICAL HANDLES & PARTS



#### A FEW TYPES OF SOCKETS



Williams' "Supersockets" are made in 5 patterns.  
Sold singly and in complete sets.

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century of  
DROP-FORGINGS and DROP-FORGED TOOLS



**HARD-TO-REACH** places are "duck soup" for "Supersockets." This workman will save a lot of time that otherwise would be consumed in disassembling the machine in order to reach the particular bolt that needs tightening. Wrench assembly consists of S15P Speeder Handle, S115P Extension Bar and Socket.

Sold by Leading Industrial Distributors Everywhere ... J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



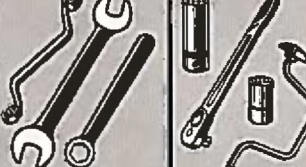
#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS







# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION

### DATA ON "VULCAN" EYE BOLTS



Williams' "Vulcan" Eye Bolts are weldless, being drop-forged from a solid blank of carbon steel. After forging they are heat-treated to further increase their strength and toughness and reduce liability of breakage. Every "Vulcan" Eye Bolt is then individually proof-tested on a standard tension machine to *fifty percent beyond* its rated "safe working load." Each Eye Bolt so tested and approved is stamped with the circular identifying mark shown in the illustration at left.

The following data is intended to help users in the selection of available standard patterns and sizes. These "Vulcan" Eye Bolts can be furnished blank, from stock. Plain and Shoulder Patterns are carried in stock threaded U. S. Std., but Miscellaneous Patterns must be threaded to order.

● Eye Bolts are used extensively to facilitate the moving, installation and handling of machines, equipment, gigs, etc. Many designers place Eye Bolts at strategic locations on their machines to eliminate hazardous stresses that would cause torsional weave or misalignment of critical sections or surfaces. In addition to these common industrial uses, Eye Bolts are today widely used on such war equipment as guns, tanks and boats for lifting and towing purposes. Eye Bolt failure, in addition to endangering life, may cause damage to delicate or costly mechanisms. *Strength and Safety* are therefore the fundamental essentials of Eye Bolt design.



SHOULDER PATTERN "VULCAN"

No.	Shank			Eye, Diameter		Capacity Blanks; Tons of 2000 lbs.	
	Diam.; Nominal Rough Size; Blank	Std. Lgth. under Shld. Blank and Thd.	Max-imum Lgth. in Stock; Blank	Inside	Outside	Safe Working Load	Break- ing Strain, Apprx.
21	1/4	1	3	3/4	1 3/16	.2	1.5
22	5/16	1 1/8	4	7/8	1 7/16	.4	2.
23	3/8	1 1/4	4 1/2	1	1 21/32	.7	3.
24	7/16	1 3/8	4 1/2	1 3/32	1 27/32	1.	4.
25	1/2	1 1/2	4 1/2	1 3/16	2 1/16	1.3	5.
26	9/16	1 5/8	4 1/2	1 9/32	2 9/32	1.5	6.
27	5/8	1 3/4	4 1/2	1 3/8	2 1/2	2.	8.
28	3/4	2	5	1 1/2	2 13/16	3.	12.
29	7/8	2 1/4	5	1 11/16	3 1/4	3.5	16.
30	1	2 1/2	5	1 13/16	3 9/16	4.	20.
31	1 1/8	2 3/4	5	2	4	5.	23.
32	1 1/4	3	6	2 3/16	4 7/16	7.5	33.
34	1 1/2	3 1/2	6	2 1/2	5 3/16	9.	42.
35	1 3/4	3 3/4	6	2 7/8	6 1/16	11.	53.
36	2	4	6	3 1/4	6 7/8	13.	68.



PLAIN PATTERN "VULCAN"

No.	Shank			Diameter Eye		Capacity Blanks; Tons of 2000 lbs.	
	Diam.; Nominal Rough Size; Blank	Std. Length under Eye, Blank and Thd.	Max-imum Length in Stock; Blank	Inside	Outside	Safe Working Load	Break- ing Strain, Apprx.
3	3/8	1 1/4	4 1/2	1	1 21/32	.7	3.
4	7/16	1 3/8	4 1/2	1 3/32	1 27/32	1.	4.
5	1/2	1 1/2	4 1/2	1 3/16	2 1/16	1.3	5.
6	9/16	1 5/8	4 1/2	1 9/32	2 9/32	1.5	6.
7	5/8	1 3/4	4 1/2	1 3/8	2 1/2	2.	8.
8	3/4	2	5	1 1/2	2 13/16	3.	12.
9	7/8	2 1/4	5	1 11/16	3 1/4	3.5	16.
10	1	2 1/2	5	1 13/16	3 9/16	4.	20.
11	1 1/8	2 3/4	6	2	4	5.	23.
12	1 1/4	3	6	2 3/16	4 7/16	7.5	33.
13	1 1/2	3 1/2	6	2 1/2	5 3/16	9.	42.
14	1 3/4	3 3/4	6	2 7/8	6 1/16	11.	53.
15	2	4	6	3 1/4	6 7/8	13.	68.
16	2 1/2	5	6	4	8 9/16	16.	85.



TYPE A



TYPE B

MISCELLANEOUS PATTERNS

These two styles are carried in stock blank (not threaded) in the following shank dimensions:

Type A, 1/4" x 3/4" to 1-1/16" x 4-1/8"

Type B, 1/4" x 1/2" to 1" x 2-3/4"



Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

TOOL HOLDERS



"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS  
SCREWS



HOIST HOOKS



EYE BOLTS



VICES

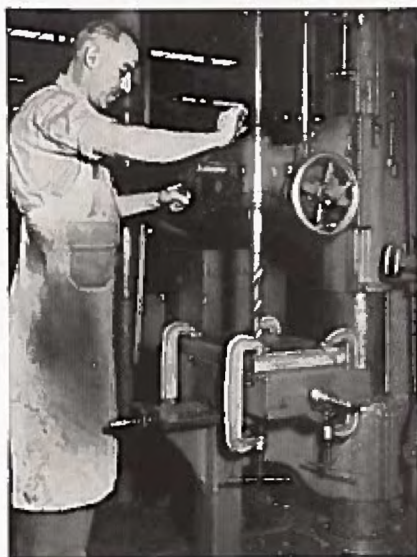






# HOW AND WHY

## WILLIAMS' TOOLS AID WAR PRODUCTION



With "C" Clamps now widely used in many phases of war industry and construction, information on the various standard types is timely. Williams' Clamps are all drop-forged from selected steel and heat-treated. Screws are made of special steel, hardened and tempered. A description of the various Williams' patterns, for light, medium, heavy and special duty, follows:

### WILLIAMS' "VULCAN" for heavy service



11 sizes, with maximum capacities from 3/4" to 12-1/2". Long screws can be furnished providing a minimum capacity of 0. Screws threaded U.S. Std.

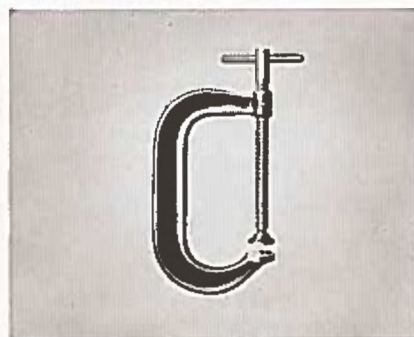
### DATA ON WILLIAMS' "C" CLAMPS

#### WILLIAMS' "AGRIPPA" for general service



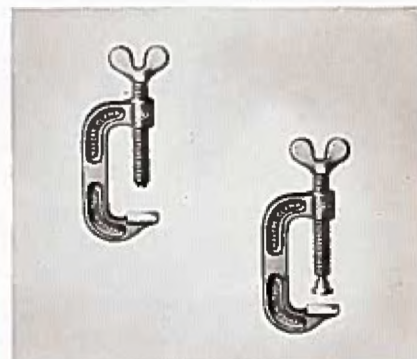
8 sizes, with maximum capacities from 3" to 18". Fitted with drop-forged swivel and screws having sliding pin handle, and threaded U.S. Std.

#### WILLIAMS' "DEEP THROAT" for light duty and welding



7 sizes, with maximum capacities from 2" to 12". Furnished in two finishes: *Standard* for general service; *Spatter-Resisting* for welding, completely cadmium-plated to resist adherence of welding spatter. Screws have special thread for strength and rapid adjustment.

### WILLIAMS' "VULCAN" TOOL-MAKERS CLAMPS



Furnished in 2 types: with plain and with swivel screw. Each type in 4 sizes, with maximum capacities as follows: plain screw, 1" to 4-1/4"; swivel screw, 3/4" to 4". All screws have wings shaped to permit use of lever in tightening. U.S. Std. thread.

### WILLIAMS' "VULCAN" PARALLEL-JAW CLAMP

for Machinists' use



4 sizes, with maximum capacities from 1-1/4" to 4-1/4". Screws threaded U.S. Std.

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

TOOL HOLDERS



"C" CLAMPS



LATHE DOGS



WRENCHES OF ALL TYPES



PIPE TONGS



THUMB NUTS  
SCREWS



HOIST HOOKS



EYE BOLTS



VICES





# HOW AND WHY WILLIAMS' TOOLS AID WAR PRODUCTION



With Williams' Spring Cutting-Off Tool Holder, feed can be applied automatically leaving operator free to watch and thoroughly lubricate the work.

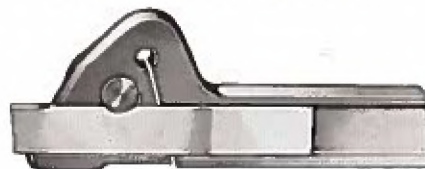
● Williams' Spring Cutting-Off Tool Holder makes comparatively simple a lathe operation normally one of the most difficult. Several advantages result from the "goose-neck" design of this Holder which automatically provides relief from any sudden or excess pressure on the cutter blade. Even an inexperienced operator can cut off work considerably out-of-round without chatter, "climbing" or damage to either tool or work. The shock-absorbing qualities of this Spring Head, likewise, tend to protect lathe bearings and journals and will definitely improve the quality of work done on old and "loose" lathes. Only with this type

## USE OF WILLIAMS' CUTTING-OFF TOOL HOLDERS

of Spring Holder can the automatic cross feed be used for cutting-off operations.

In setting-up, the *spring* cutting-off tool should be set slightly above center. A *rigid* cutting-off tool, however, should always be set on exact center. See drawing at lower left. Cutters may be sharpened by grinding the end of the blade—usually to an angle of 5°. The sides of Williams' blades never need to be reground since they have sufficient taper throughout their length to provide side clearance. The work should be flooded with oil when cutting off steel. No lubricant is necessary with cast iron or non-ferrous metals.

## WILLIAMS' SPRING CUTTING-OFF HOLDERS



**Straight Shank Pattern**  
Four sizes, 3/8 x 31/32" to 3/4 x 1-5/8".



**Right Hand Offset Pattern**  
Five sizes, 3/8 x 13/16" to 3/4 x 1-5/8".

in which these tools are available. The same blade fits either pattern in corresponding sizes.

Below are illustrated three patterns of Williams' Cutting-Off and Side-Tool Holder, and sizes listed in which each is available. This Holder accommodates either a cutting-off or side blade without any adjustment. It is a *rigid* rather than *spring* tool. Its cutting-off blade is interchangeable with Williams' Spring Holder. Both these types of Williams' Holders employ a positive cam lock to hold their blades in place, which is both quick-acting and rugged.

## WILLIAMS' CUTTING-OFF AND SIDE-TOOL HOLDERS



**Right Hand Straight Shank Pattern**



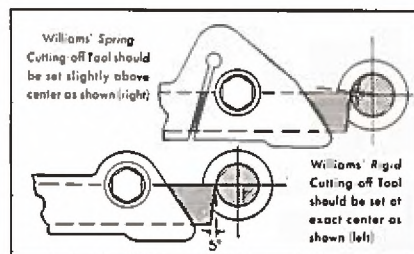
**Right Hand Offset Pattern**



**Left Hand Offset Pattern**

All patterns are made in seven sizes, 5/16" x 13/16" to 7/8" x 1-3/4".

**WILLIAMS**  
SUPERIOR DROP-FORGED TOOLS  
Headquarters  
for over half a century for  
DROP-FORGINGS and DROP-FORGED TOOLS



The above illustrations show two patterns of Williams' Spring Cutting-Off Tool Holders—Straight and Right Hand Offset—and list the sizes

Sold by Leading Industrial Distributors Everywhere... J. H. Williams & Co., Buffalo, N. Y.

### TOOL HOLDERS



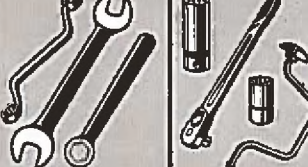
### "C" CLAMPS



### LATHE DOGS



### WRENCHES OF ALL TYPES



### PIPE TONGS



### THUMB NUTS SCREWS



### HOIST HOOKS



### EYE BOLTS







# HOW AND WHY

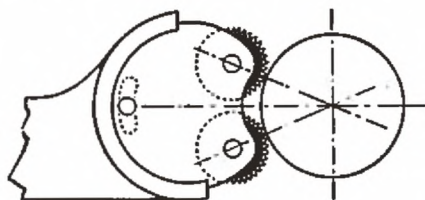
## WILLIAMS' TOOLS AID WAR PRODUCTION

### USE OF WILLIAMS' KNURLING TOOL HOLDERS

● Knurling differs from most lathe operations in that it is not a *cutting*, but rather an *embossing* or *extruding* operation. Knurling actually increases the diameter of the work.

Whenever possible, work to be knurled should be held between centers. Long and extremely light pieces should be supported with a Steady Rest. In other words, the work must be prevented from springing away from the cross pressure of the knurling rolls.

Set the Knurling Tool Holder well back in the Tool Post and so positioned that top and bottom rolls are equidistant above and below center of the work, as sketched below. Tool Post screw should be securely tightened.



With lathe in slow speed, begin at Tailstock end so as to feed towards Headstock. Force the Knurling Tool into the work—*abruptly*—to approximately full depth of the knurl. This should be accomplished *before* rolls can make one complete revolution. If the knurling is to start at the extreme end of the work, start the Tool so that only half the width of the roll face contacts the work when forced in with the hand cross feed.



*The self-centering Head of this Williams' No. 1-K Holder assures equal pressure of both Knurling Rolls against the work.*

Engage the longitudinal power feed and let the Tool travel across the face of the work for desired distance. Now reverse direction of carriage travel, without removing Tool from the impression, and feed back across the face of the work. Slight additional cross feed may be applied, as the carriage reverses, to further sharpen knurling.

Some machinists use oil when knurling—others prefer air pressure so as to blow all chips clear. Illustration below shows sample of knurling by both methods. Actually both samples are of about equal quality.



Unretouched photo of work sample. Air pressure used on knurling at left end—oil on knurling at right. Piece is 3/4" mild steel bar; coarse knurled with Williams' No. 11-K Holder; spindle speed 250 R.P.M.; both ends knurled with one pass up and reverse.

### WILLIAMS' KNURLING TOOL HOLDERS



Nos. 00-K to 2-K, 4 sizes, 5/16" x 3/4" x 5" to 5/8" x 1-3/8" x 7-1/2" with self-centering Head and fitted with ONE pair of knurls.



Nos. 11-K and 12-K, 2 sizes, 1/2" x 1-1/8" x 6-5/8" and 5/8" x 1-3/8" x 6-5/8" with Revolving Head and THREE pairs of knurls, for fine, medium and coarse work.

### KNURLS FOR WILLIAMS' HOLDERS



DIAMOND PATTERN



STRAIGHT-LINE PATTERN

Both patterns furnished in pairs, to fit standard makes of Knurling Tools, in 3 different pitches: Coarse, 14 pitch; Medium, 21 pitch; Fine, 33 pitch.

## WILLIAMS

SUPERIOR DROP-FORGED TOOLS

Headquarters  
for over half a century for  
**DROP-FORGINGS and DROP-FORGED TOOLS**

Sold by Leading Industrial Distributors Everywhere . . . J. H. Williams & Co., Buffalo, N. Y.

#### TOOL HOLDERS



#### "C" CLAMPS



#### LATHE DOGS



#### WRENCHES OF ALL TYPES



#### PIPE TONGS



#### THUMB NUTS SCREWS



#### HOIST HOOKS



#### EYE BOLTS

